YAKEEN-2022

Kinematics – [DPP-04]

1. A body starts from rest and is uniformly accelerated for 30 s. The distance travelled in the first 10s is x_1, next 10 s is x_2 and the last 10 s is x_3. Then $x_1 : x_2 : x_3$ is the same as

(A) 1 : 2 : 4 (B) 1 : 2 : 5
(C) 1 : 3 : 5 (D) 1 : 3 : 9

2. A particle, after starting from rest, experiences, constant acceleration for 20 seconds. If it covers a distance of S_1, in first 10 seconds and distance S_2 in next 10 sec, then

(A) $S_2 = S_1/2$ (B) $S_2 = S_1$
(C) $S_2 = 2S_1$ (D) $S_2 = 3S_1$

3. A body sliding on a smooth inclined plane requires 4 sec to reach the bottom after starting from rest at the top. How much time does it take to cover one fourth the distance starting from the top

(A) 1 sec (B) 2 sec
(C) 0.4 sec (D) 1.6 sec

4. The initial velocity of a particle is 10 m/sec and its retardation is 2 m/sec^2. The distance covered in the fifth second of the motion will be

(A) 1 m (B) 19 m
(C) 50 m (D) 75 m

5. A body starts from rest, the ratio of distances travelled by the body during 3rd and 4th seconds is :

(A) 7/5
(B) 5/7
(C) 7/3
(D) 3/7

6. A bullet fired into a fixed target loses half of its velocity after penetrating 3 cm. How much further it will penetrate before coming to rest assuming that it faces constant resistance to motion?

(A) 1.5 cm (B) 1.0 cm
(C) 3.0 cm (D) 2.0 cm

7. A car travelling at a speed of 30 km/h is brought to rest in a distance of 8 m by applying brakes. If the same car is moving at a speed of 60 km/h then it can be brought to rest with same brakes in

(A) 64 m (B) 32 m
(C) 16 m (D) 4 m

8. A car moving with speed v on a straight road can be stopped with in distance d on applying brakes. If same car is moving with speed $3v$ and brakes provide half retardation, then car will stop after travelling distance

(A) 6 d (B) 3 d
(C) 9 d (D) 18 d

9. If a car at rest, accelerates uniformly to a speed of 144 km/h in 20s, it covers a distance of

(A) 2880 m
(B) 1440 m
(C) 400 m
(D) 20 m

10. A car travelling at 108 kmh^{-1} has its speed reduced to 36 kmh^{-1} after travelling a distance of 200 m. Find the retardation (assumed uniform) and time taken for this process.

11. A car is moving along a straight road with a uniform acceleration. It passes through two points P and Q separated by a distance with velocity 30 km/h and 40 km/h respectively. The velocity of the car midway between P and Q is

(A) 33.3 km/h (B) $20\sqrt{2}$ km/h

(C) $25\sqrt{2}$ km/h (D) 0.35 km/h

12. A particle travels 10 m in first 5 sec and 10 m in next 3 sec . Assuming constant acceleration what is the distance travelled in next 2 sec :

(A) 8.3 m (B) 9.3 m

(C) 10.3 m (D) None of above

13. A body travelling with uniform acceleration crosses two points A and B with velocities 20 m/s and 30 m/s respectively. The speed of the body at mid-point of A and B is

(A) 25 m/s (B) 25.5 m/s

(C) 24 m/s (D) $10\sqrt{6}$ m/s

14. A body covers 10 m in the seconds second and 25 m in fifth second of its motion. If the motion is uniformly accelerated, how far will it go in the seventh second ?

15. A man walks on a straight road from his home to a marked 2.5 km away with a speed of 5 km/h. Finding the market closed, he instantly turns and walks back home with a speed of 7.5 km/h. The average speed of the over the interval of time 0 to 40 min. is equal to

(A) 5 km/h (B) 25/4 km/h

(C) 30/4 km/h (D) 45/8 km/h

ANSWERS KEY

1. **(C)**
2. **(D)**
3. **(B)**
4. **(A)**
5. **(B)**
6. **(B)**
7. **(B)**
8. **(D)**
9. **(C)**
10. **($2m/s^2$)(10sec)**
11. **(C)**
12. **(A)**
13. **(B)**
14. **(35)**
15. **(D)**

Note - If you have any query/issue

Mail us at support@physicswallah.org